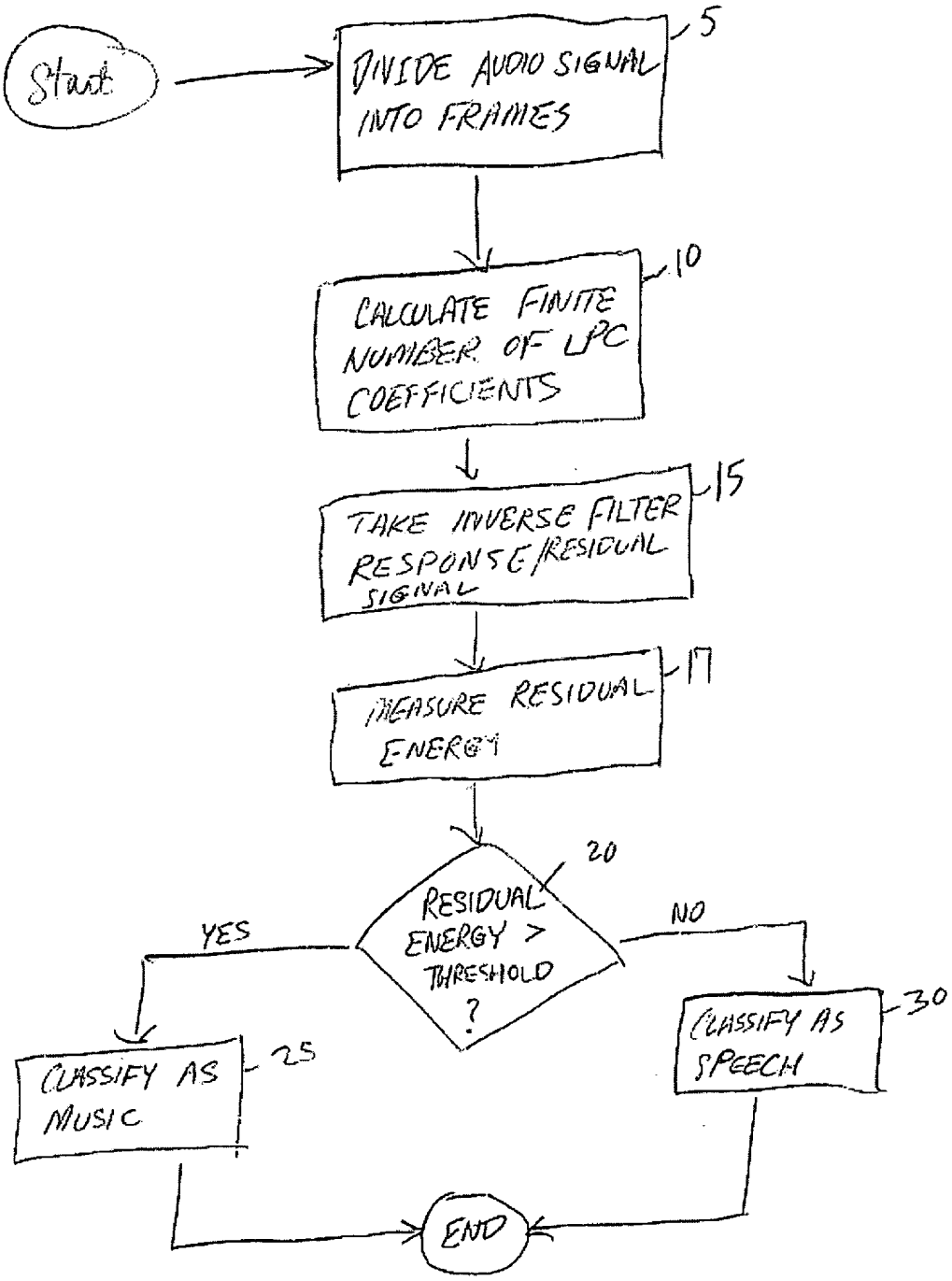
Start
DIVIDE AUDIO SIGNAL INTO FRAMES
5
CALCULATE FINITE NUMBER OF LPC COEFFICIENTS
10
TAKE INVERSE FILTER RESPONSE/RESIDUAL SIGNAL
15
MEASURE RESIDUAL ENERGY
17
RESIDUAL ENERGY > THRESHOLD ?
20
YES
NO
CLASSIFY AS MUSIC
25
CLASSIFY AS SPEECH
30
END

FIGURE 1

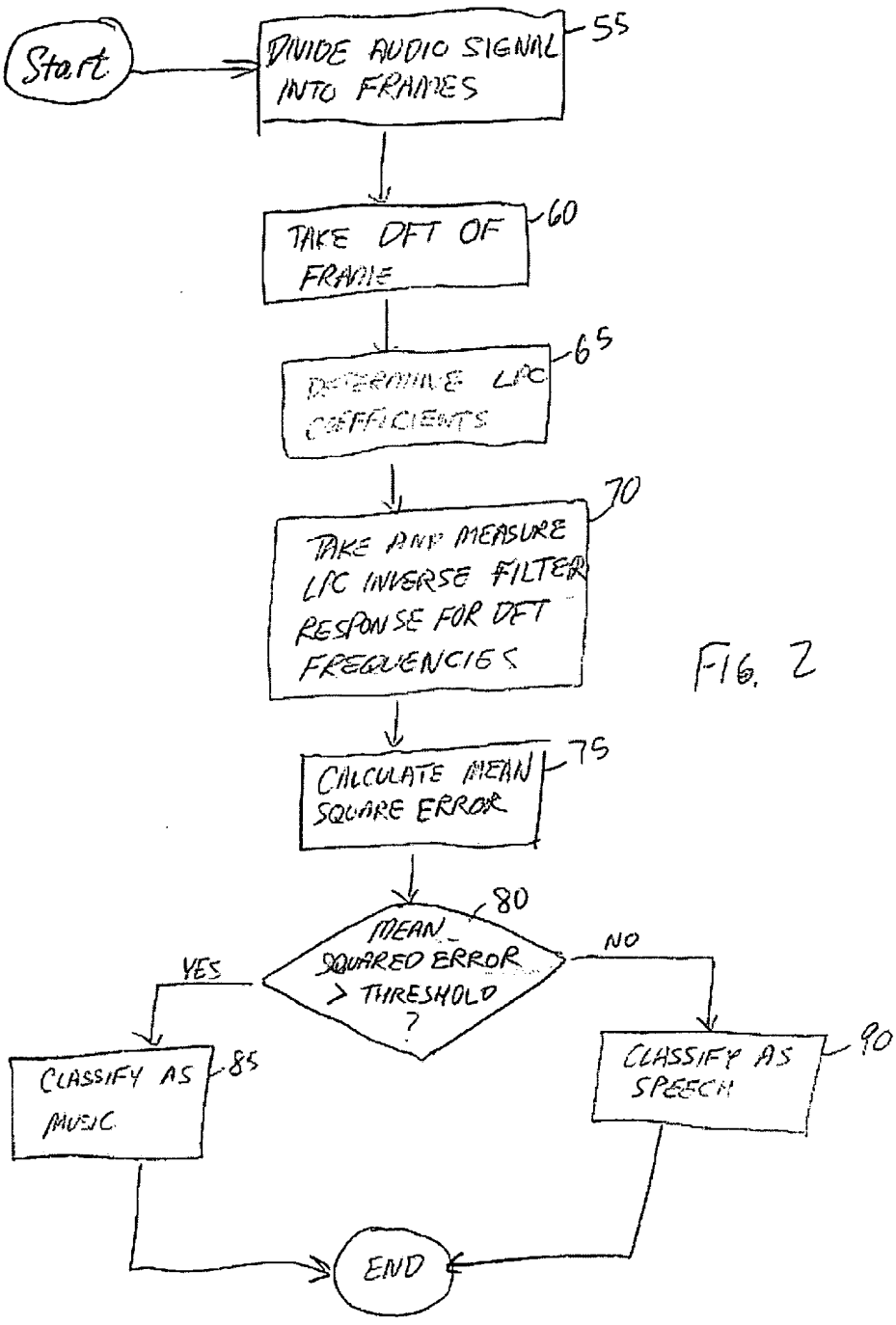
Start
DIVIDE AUDIO SIGNAL INTO FRAMES
55
TAKE DFT OF FRAME
60
DETERMINE LPC COEFFICIENTS
65
TAKE AND MEASURE LPC INVERSE FILTER RESPONSE FOR DFT FREQUENCIES
70
CALCULATE MEAN SQUARE ERROR
75
MEAN SQUARED ERROR > THRESHOLD ?
80
YES
NO
CLASSIFY AS MUSIC
85
CLASSIFY AS SPEECH
90
END

FIG. 2

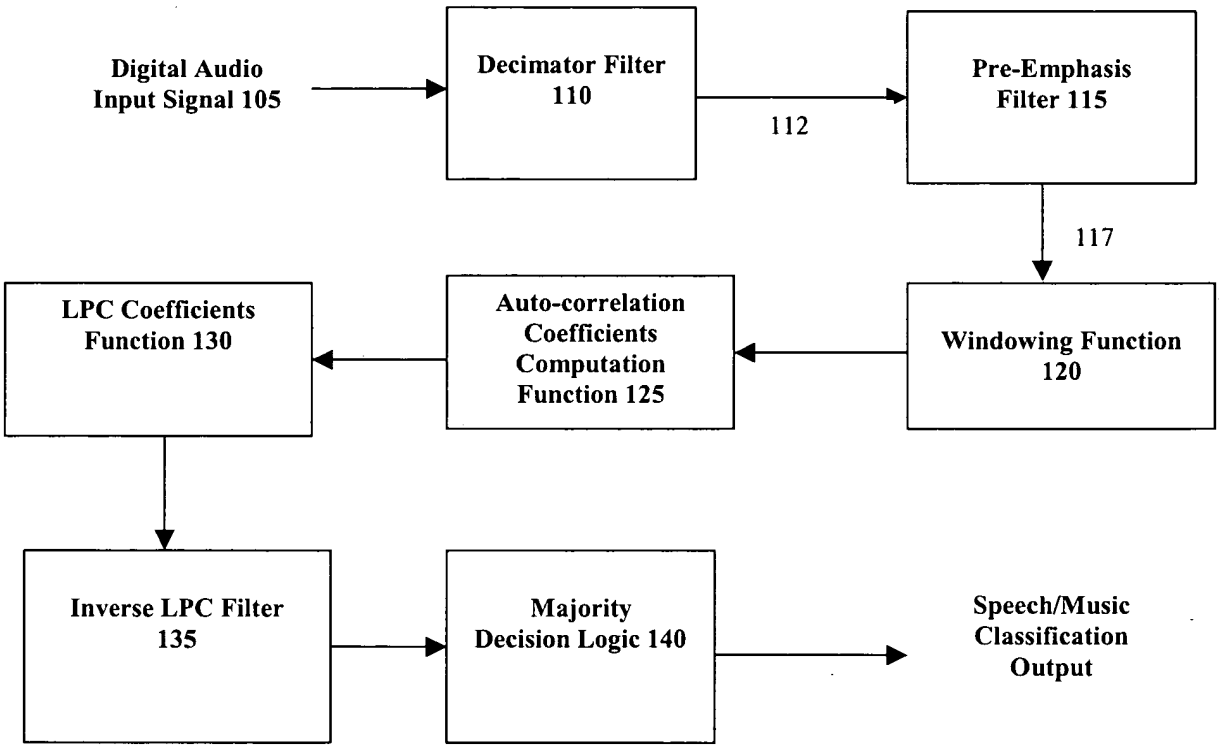
Digital Audio Input Signal 105
Decimator Filter 110
112
Pre-Emphasis Filter 115
117
Windowing Function 120
Auto-correlation Coefficients Computation Function 125
LPC Coefficients Function 130
Inverse LPC Filter 135
Majority Decision Logic 140
Speech/Music Classification Output

FIGURE 3

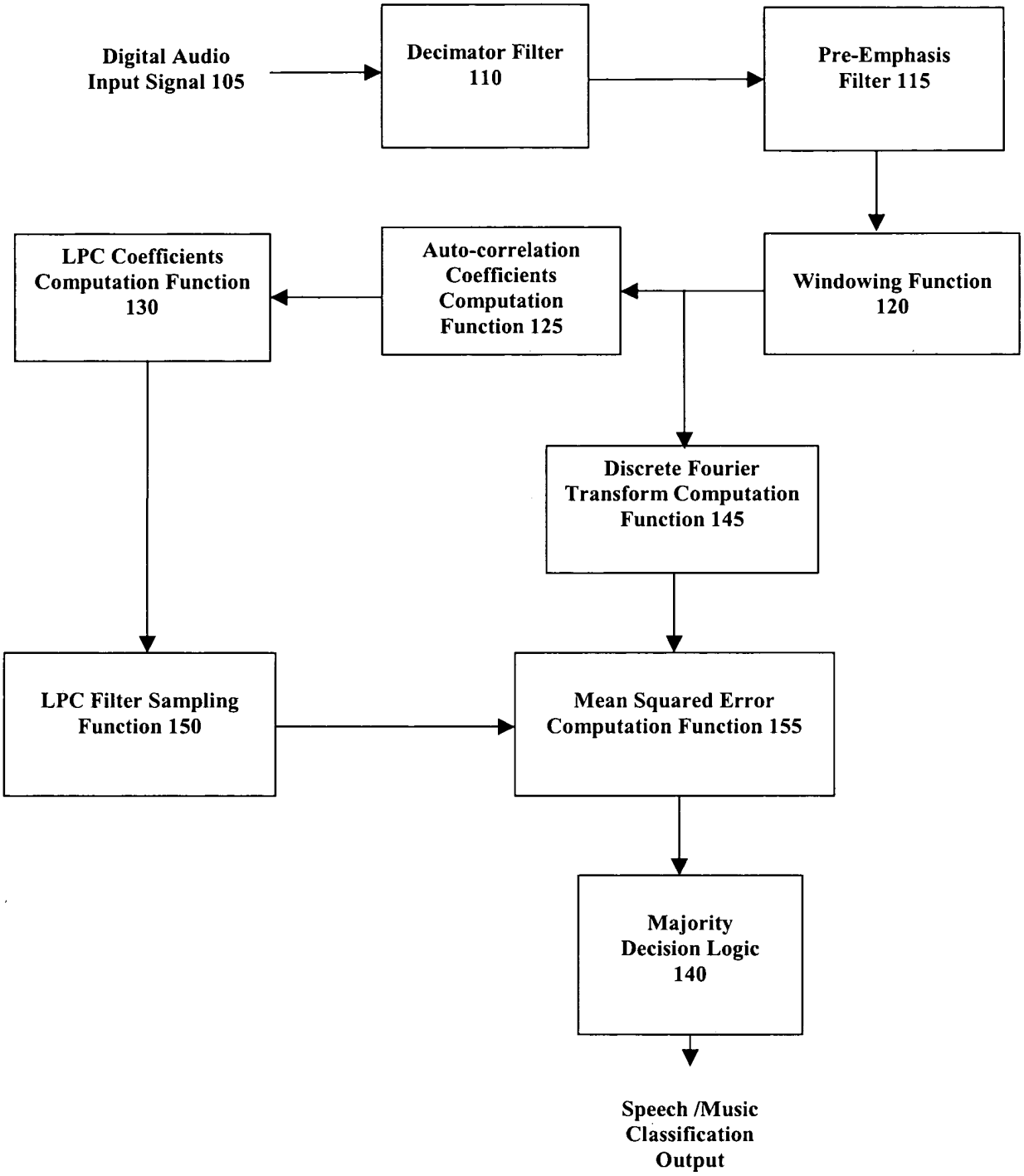
Digital Audio Input Signal 105
Decimator Filter 110
Pre-Emphasis Filter 115
Windowing Function 120
Auto-correlation Coefficients Computation Function 125
LPC Coefficients Computation Function 130
Discrete Fourier Transform Computation Function 145
LPC Filter Sampling Function 150
Mean Squared Error Computation Function 155
Majority Decision Logic 140
Speech /Music Classification Output

FIGURE 4

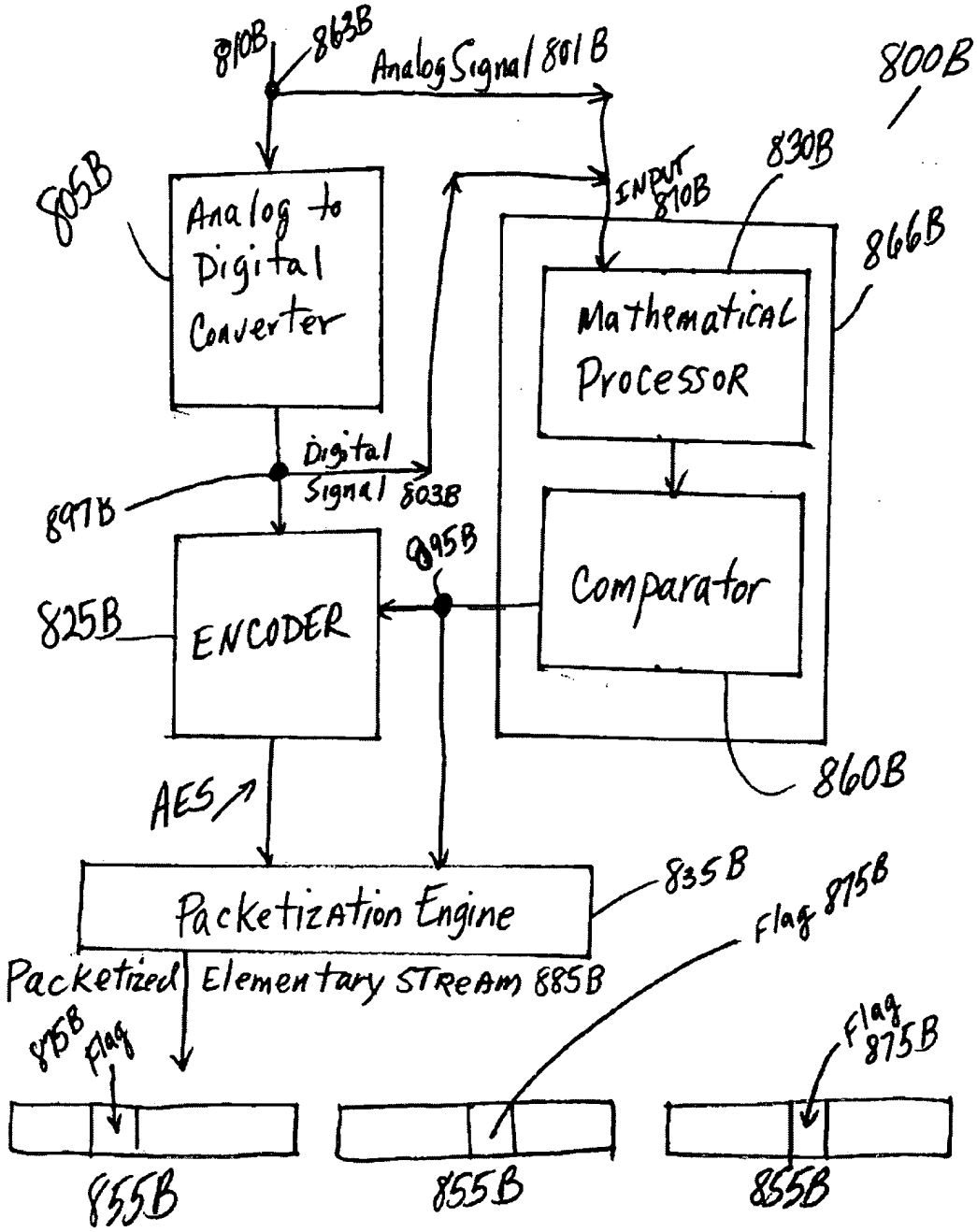
810B
863B
Analog Signal 801B
800B
805B
Analog to Digital Converter
INPUT 810B
830B
866B
Mathematical Processor
Digital Signal 803B
897B
895B
825B
ENCODER
Comparator
860B
AES
835B
Packetization Engine
Flag 875B
Packetized Elementary STream 885B
858B
Flag
Flag 875B
855B
855B
855B

FIGURE 5

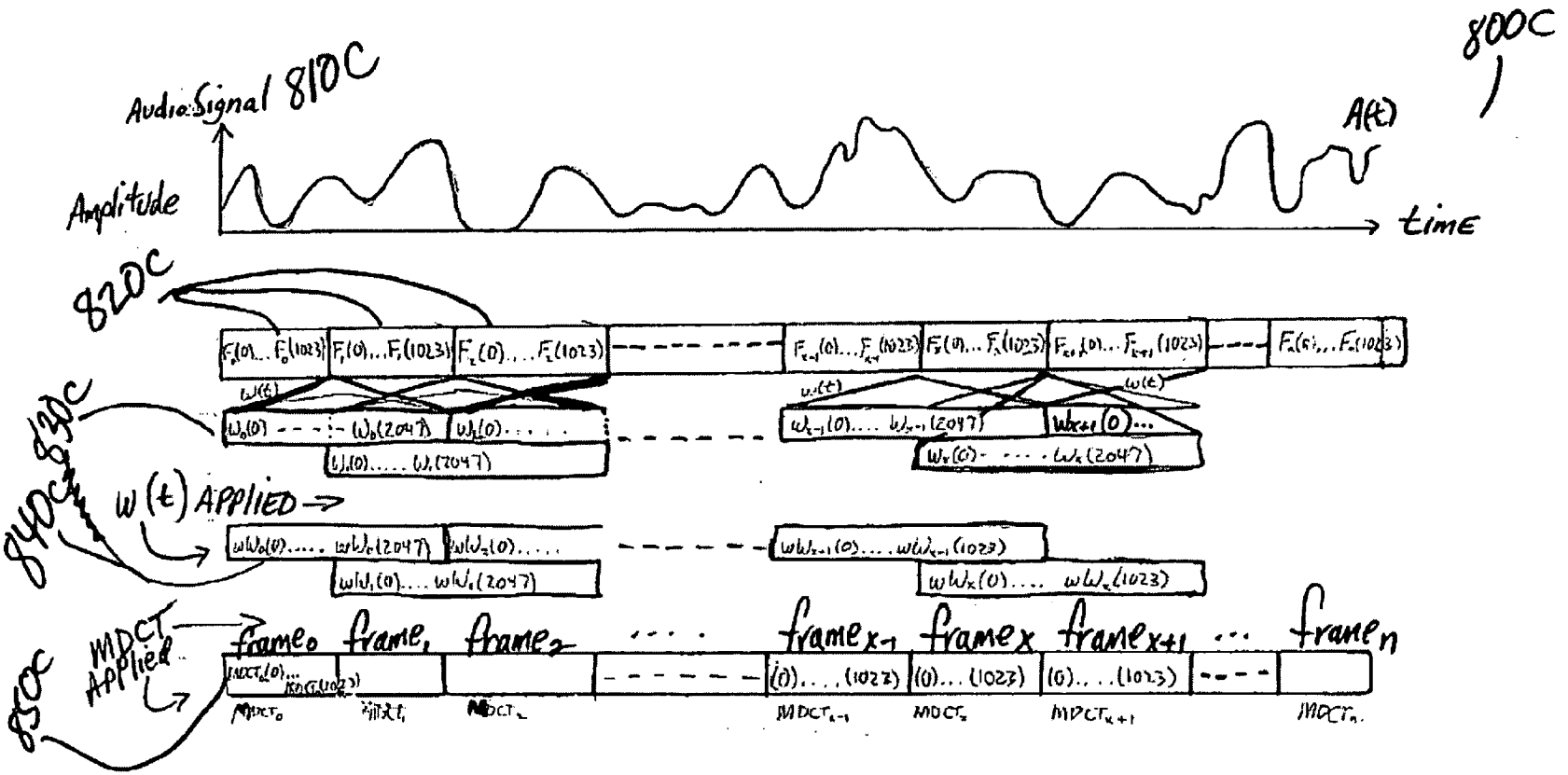
800C
Audio Signal 810C
Amplitude
A(t)
time
820C
830C
840C
W(t) APPLIED
MDCT APPLIED
850C
frame0
frame1
frame2
framex-1
framex
framex+1
framen

FIGURE 6

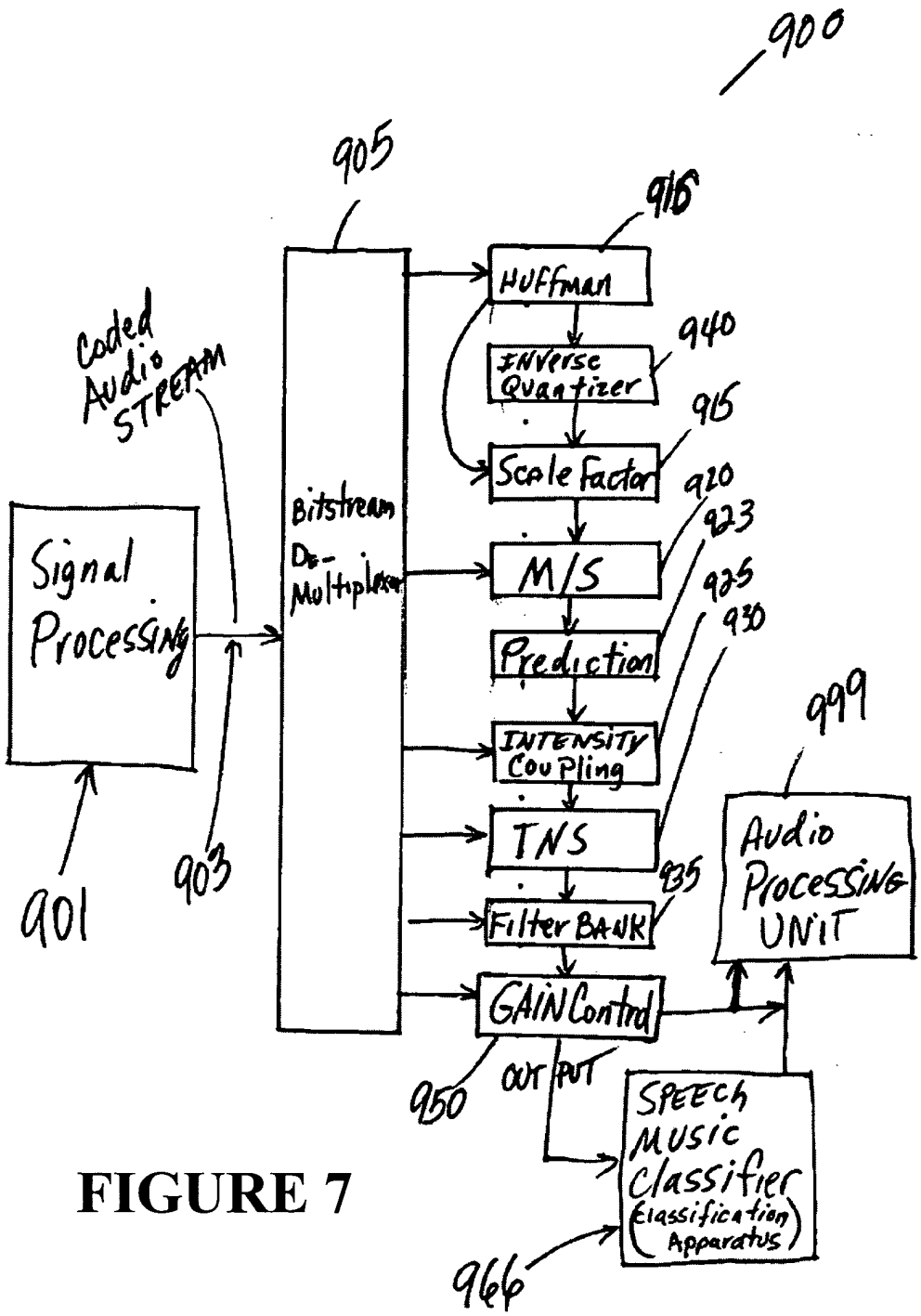
900
905
916
Huffman
940
Inverse Quantizer
915
Scale factor
920
923
M/S
925
930
Prediction
Intensity Coupling
TNS
935
Filter BANK
GAIN Control
999
Audio Processing UNIT
Coded Audio STREAM
Bitstream De-Multiplexer
Signal Processing
901
903
950
OUTPUT
Speech Music Classifier
(Classification Apparatus)
966

FIGURE 7